

CLAIMS

- 1 1. A diode pumped, intracavity doubled laser, comprising:
2 at least two resonator mirrors defining a resonator cavity;
3 an Nd:YVO₄ laser crystal positioned in the resonator cavity;
4 an LBO doubling crystal positioned in the resonator cavity;
5 a diode pump source supplying a pump beam to the laser crystal and
6 producing a laser crystal beam with at least one axial mode that are incident on the
7 doubling crystal to produce a frequency doubled output beam with an output power
8 of at least 1 watt, wherein the diode pump source is configured to be coupled to a
9 power supply.
- 1 2. The laser of claim 1, wherein the output power is at least 2
2 watts.
- 1 3. The laser of claim 1, wherein the output power is at least 3
2 watts.
- 1 4. The laser of claim 1, wherein the output power is at least 4
2 watts.
- 1 5. The laser of claim 1, wherein the output power is at least 5
2 watts.
- 1 6. The laser of claim 1, wherein the output power is at least 10
2 watts.
- 1 7. The laser of claim 1, wherein the output power is at least 15
2 watts.
- 1 8. The laser of claim 1, wherein the output power is at least 20
2 watts.

09872865-060101
101090-59827860

- 1 9. The laser of claim 1, wherein the doubled output beam has a %
2 RMS noise of less than 0.5%.
- 1 10. The laser of claim 1, wherein the doubled output beam has a %
2 RMS noise of less than 0.3%.
- 1 11. The laser of claim 1, wherein the doubled output beam has a %
2 RMS noise of less than 0.2%.
- 1 12. The laser of claim 1, wherein the doubled output beam has a %
2 RMS noise of less than 0.1%.
- 1 13. The laser of claim 1, wherein the diode pump source is a diode
2 bar.
- 1 14. The laser of claim 1, wherein the diode pump source is a
2 plurality of diode bars.
- 1 15. The laser of claim 1, wherein the diode pump source is fiber-
2 coupled.
- 1 16. The laser of claim 1, wherein at least four axial modes are
2 incident on the doubling crystal.
- 1 17. The laser of claim 1, wherein at least five axial modes are
2 incident on the doubling crystal.
- 1 18. The laser of claim 1, wherein at least 10 axial modes are
2 incident on the doubling crystal.
- 1 19. The laser of claim 1, wherein the output beam is substantially
2 TEM₀₀.